

ION SOURCE AND METHODS FOR MALDI MASS SPECTROMETRY  
ABSTRACT OF THE DISCLOSURE

5        Provided are MALDI ion sources, methods of forming ions and mass analyzer  
systems. In various embodiments, provided are MALDI ion sources configured to  
irradiate a sample on a sample surface with a pulse of laser energy at angle within 10  
degrees or less of the surface normal, and a first ion optics system configured to extract  
sample ions in a direction within 5 degrees or less of the surface normal. In various  
embodiments, MALDI ion sources having substantially coaxial sample irradiation and  
10    ion extraction are provided. In various embodiments, methods are provided, which  
produce sample ions by MALDI and extract sample ions using an accelerating electrical  
field to form an ion beam, such that, the angle of the trajectory at the exit from the  
accelerating electrical field of sample ions substantially at the center of the ion beam is  
substantially independent of sample ion mass.

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